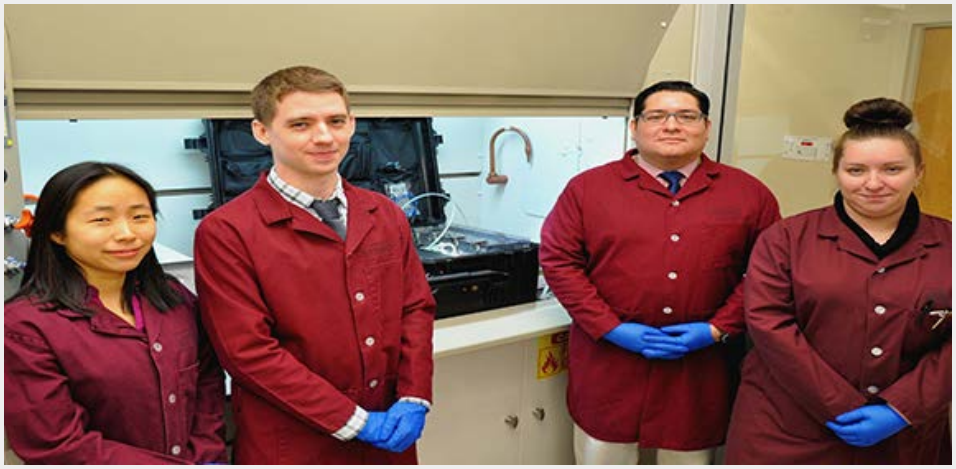
Written on MARCH 17, 2015 AT 8:00 AM *by* SVANDERWERFF

NAMRU – San Antonio Investigators Develop Portable Ozone Sterilizer

Filed under FLEET AND THE FLEET MARINE FORCE, FORCE HEALTH AND SAFETY, PUBLIC HEALTH [NO COMMENTS]

By Roy E. Dory, Naval Medical Research Unit – San Antonio



Dory Development Team – (L-R) Bridget Endler, Roy Dory principal investigator, Dr. Luis Martinez, Heather Grossman

Combat operations and humanitarian missions often place military clinicians, dentists, and front-line corpsmen in austere conditions. Currently available sterilization systems intended for field use are often bulky and require consumable resources, including chemicals or large sources of energy, which must be transported to the point of use.

Recent testing by researchers in the Immunodiagnostic and Bioassay Department at the Naval Medical Research Unit – San Antonio (NAMRU-SA) demonstrated gaseous ozone, a strong oxidizing agent, can be generated from the oxygen in ambient air at sufficient concentrations to effectively destroy bacteria. The technique offers an alternative method of sterilization that requires no consumable chemicals and a relatively small amount of energy. With funding from the Marine Corps Systems Command, the NAMRU-SA researchers teamed up with engineers in the Expeditionary and Trauma Medicine Department at NAMRU-SA to develop the concept into a portable, prototype sterilization system.

Navy Medicine Video

Navy Medicine is a global healthcare network of 63,000 Navy medical personnel around the world who provide high quality health care to more than one million eligible beneficiaries. Navy Medicine personnel deploy with Sailors and Marines worldwide, providing critical mission support aboard ship, in the air, under the sea and on the battlefield.

Navy Medicine Social Media

Follow us on Twitter

Join us on Facebook

Read our publications

View our photo stream

Watch our videos

Navy Medicine Live Archives

April 2015 (4)

March 2015 (21)

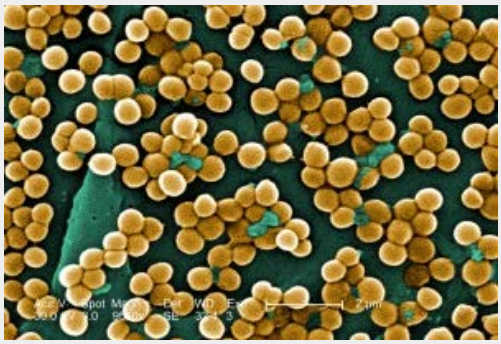
February 2015 (16)

January 2015 (12)

Combat operations and humanitarian missions often place military clinicians, dentists, and front-line corpsmen in austere conditions.

The prototype ozone sterilizer has a sterilization compartment designed to accommodate small medical instruments and dental tools and is housed in a ruggedized carrying case. The system can be powered from external sources or from an internal battery pack, which allows for approximately five complete sterilization cycles between charges. The system is fully automated, with custom developed software to control ozone production, monitor conditions in the sterilization compartment, and convert remaining ozone back into oxygen at the end of a sterilization cycle.

The prototype recently underwent a battery of tests at NAMRU-SA to determine the effectiveness of the system at destroying twenty-four different bacterial strains of importance to military medicine. The sterilizer effectively eliminated all of the plated bacterial strains, including both Gram-positive and Gram-negative bacteria, and antibiotic resistant strains such as *Methicillin-resistant Staphylococcus aureus* (MRSA).



The sterilizer effectively eliminated all of the plated bacterial strains, including both Gram-positive and Gram-negative bacteria, and antibiotic resistant strains such as Methicillin-resistant Staphylococcus aureus (MRSA).

Leveraging the recently collected data, efforts are currently underway to further optimize the prototype ozone sterilizer. The engineering team aims to improve the efficiency of the system, thereby extending battery life, while also increasing ozone production, which will allow the effective sterilization time to be reduced. The team is also exploring methods to further reduce the size and weight of the sterilizer, while ruggedizing the system for environmental conditions at the point of care.

At the conclusion of the current design iteration, NAMRU-SA hopes to transition the prototype sterilizer to the Navy Advanced Medical Development Team to assist with further development and ultimately transition the technology to the fleet.

The ozone sterilizer development began as a set of bench-top experiments and has now emerged as a functional prototype, illustrates NAMRU-SA's translational approach to biomedical research. With further optimization, NAMRU-SA investigators hope to offer a truly portable and self-sufficient field sterilizer that can be deployed with medics and corpsmen to enhance the care available to the US warfighter in remote environments.

← Next post Previous post →

svanderwerff tagged this post with: health, MEDNEWS, military, mission, NAMRU San Antonio, Public Health

Read 146 articles by svanderwerff

December 2014 (17)
November 2014 (11)
October 2014 (15)
September 2014 (20)
August 2014 (14)
July 2014 (13)
June 2014 (8)
May 2014 (11)
April 2014 (9)
March 2014 (14)
February 2014 (7)
January 2014 (7)
December 2013 (7)
November 2013 (12)
October 2013 (7)
September 2013 (14)
August 2013 (13)
July 2013 (11)
June 2013 (22)
May 2013 (15)
April 2013 (14)
March 2013 (14)
February 2013 (14)
January 2013 (12)
December 2012 (11)
November 2012 (11)
October 2012 (7)
September 2012 (9)
August 2012 (12)
July 2012 (13)
June 2012 (17)
May 2012 (22)
April 2012 (14)
March 2012 (13)
February 2012 (14)
January 2012 (13)
December 2011 (13)
November 2011 (20)
October 2011 (22)